PATENT ABSTRACTS OF JAPAN

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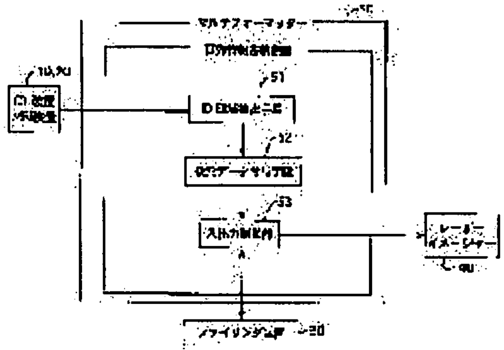
(54) METHOD AND DEVICE FOR STORING PICTURE INFORMATION

(57)Abstract:

PROBLEM TO BE SOLVED: To simply store image information sent from a computer tomography(CT) device, magnetic resonance imaging (MRI) device, etc., relationally with ID information corresponding to the image information.

SOLUTION: An image part in which ID information is recorded is extracted from overall image information sent from a CT device 10 and an MRI device 20. Mutually corresponding retrieving data are applied to the extracted image part and the overall image information and individually stored in a filing device 30 so that the overall image information is stored indirectly based upon the corresponding ID information.



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[Date of final disposal for application]

[Patent number]

[Date of registration]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the are recording approach of image information and equipment which were equipped with ID information as a part of image information into image information at the detail about the are recording approach of image information, and equipment.
[0002]
[Description of the Prior Art] After reading conventionally the image recorded on the photographic film in photoelectricity, obtaining image information and performing the suitable image processing for this image information, carrying out playback record as a visible image is performed in various fields.
[0003] Moreover, the radiation image information of the photographic subject of the body etc. is once recorded on an accumulative sheet-like fluorescent substance. Scan this accumulative fluorescent substance sheet with excitation light, such as laser light, and accelerated-phosphorescence luminescence light is made to produce. The obtained accelerated-phosphorescence luminescence light is read in photoelectricity, a picture signal is acquired, and it is based on this picture signal. The radiation image of a photographic subject Record ingredients, such as photosensitive material, The radiation image recording regeneration system (henceforth CR (computed radiography) equipment) made to output to CRT etc. as a visible image is already put in practical use. This system has the practical advantage that an image can be recorded over very large radiation exposure as compared with the radiograph system which uses the conventional film photo.
[0004] And it is necessary to match various information, such as a name of patient, a photography (record) date, a photography part, and a birth date, with each accumulative fluorescent substance sheet in the system using the above accumulative fluorescent substance sheets about the image recorded on the accumulative fluorescent substance sheet. Since it becomes a search key item in the case of putting in a database and managing that patient's clinical-recording information, medication information, etc. especially about a name of patient also in such information, ID (identification) number which consists of alphabetic characters, such as the alphabet, a figure, a notation, a kanji, piece kana, and a hiragana, is given, and information, such as the above-mentioned photography date containing this ID number, is called ID information.
[0005] In CR system using an accumulative fluorescent substance sheet, the above-mentioned ID information etc. is inputted from predetermined ID information terminal at first, and these contents are accumulated in predetermined are recording equipment. In addition, these contents may be made to be recorded also on the ID card as a patient's patient's registration card further.
[0006] And in case inspection by CR system is actually conducted, the image information to which the information about photography was added after the operator inputted ID information into ID information terminal or reading the ID number etc. in the above-mentioned ID card, and it considered as ID information, this was given to as information for retrieval on the radiation image information obtained by the above-mentioned CR system, and ID information was given is memorized by the predetermined storage.
[0007] In addition, ID information which turns into the above-mentioned information for retrieval in this case is the coded so-called alphabetic data (text data).
[0008] By the way, in the medical field in recent years, the various systems by which a format differs from CR system for observing the internal structure of the body besides the above-mentioned CR system have been developed and put in practical use. For example, CT (computed tomography; fault image photography) equipment, MRI (magnetic resonance image; magnetic-resonance-imaging photography) equipment, etc. are one of the typical thing, and if storage, playback, an image processing, etc. can be processed with the spread of these alien systems using a storage, a laser imager, etc. of

CR system also about the image information obtained by these systems, it will be thought that the more nearly many-sided image for a diagnosis can be obtained.

[0009] However, since specification unific not only about the specification of transmission and reception but the image information itself generally is not established between alien systems, such as these CT scanners, and CR system, it is necessary to transmit and receive the image information by the alien system as a video signal.

[0010] For this reason, in a receiving side, unless it transmits in data format to which these alien-systems side suits CR system, it is necessary to process a video signal about the image information obtained by the above-mentioned CT scanner etc., so that CR system may be suited.

[0011] Then, an applicant for this patent proposes for example, a multi-formatter etc. as what fits the image information transmitted from such an alien system to CR system, and is made to change into the information which can process that image information by the receiving side (CR system) using this multi-formatter.

[0012]

[Problem(s) to be Solved by the Invention] By the way, in order to utilize the image information transmitted as a video signal from alien systems, such as the above-mentioned CT scanner, it is advantageous to a predetermined record medium to once carry out are recording preservation of this image information. In this case, by alien systems, such as a CT scanner, although ID information is given to image information as information for retrieval for next retrieval in CR system, in order to attain that purpose by observing the reconfigurated image with a monitor or outputting an image to a film etc., generally filing the obtained image information is not performed.

[0013] Therefore, about the image information sent to CR system from these systems, even if it may include ID information as some images in that image, it is thought that transmitting only ID information as alphabetic data separately from image information generally is not performed, and the image information sent from the above-mentioned alien system in this case cannot be filed.

[0014] However, it is very important to relate this sent image information with ID information corresponding to that image information, and to accumulate it, when utilizing that image information effectively.

[0015] This invention is made in view of the above-mentioned situation, and it aims at offering the are recording approach of image information and equipment which made it possible to relate with ID information corresponding to the image information the image information sent from a CT scanner, MRI equipment, etc., and to accumulate it simple.

[0016]

[Means for Solving the Problem] The 1st image information are recording approach of this invention the image information recorded on record carriers, such as an accumulative fluorescent substance sheet and a film It reads by scanning laser light etc. In the image information are recording approach recorded on predetermined record media, such as an optical disk and a hard disk, after giving the retrieval data for retrieval to the obtained image information (the whole image information) or the image information (the whole image information) inputted from various image information acquisition systems The ID number recorded on a part of position of the image information of said whole, i.e., whole image information, An image part including ID information which consists of a photography date, a photography part, positioning, etc. is extracted. It is characterized by recording an image part including ID information to which retrieval data were given to the image part including this extracted ID information, and retrieval data were given on a record medium as image information with the separate image information of said whole.

[0017] Here, as for retrieval data, it is desirable to have relation the same as that of the retrieval data given to the whole image information or predetermined.

[0018] For example, what is necessary is just to consider as the character string which made the retrieval data given to an image part including ID information the same character string as the character string (for example, sequential thing), or added further the notation for distinction with the whole image information etc. to the character string, when the retrieval data which consist of a character string in the whole image information are given. In addition, since both cannot be distinguished in the case of retrieval if the same retrieval data are used when recording an image part including whole image information and ID information on the same record medium, it is desirable to distinguish both, as mentioned above.

[0019] Moreover, this retrieval data may be beforehand recorded on a part of whole image information. That is, in case image information is acquired by other image information acquisition systems, this retrieval data may be given beforehand.

[0020] The 2nd image information are recording approach of this invention extracts the image part which includes ID information like the 1st approach. Retrieval data are given to ID information which has recognized ID information as alphabetic data from this extracted image part, and has been recognized as this alphabetic data. It is characterized by recording ID information to which these retrieval data were given on a record medium as ID data with the separate image information of said whole.

[0021] That is, by the 1st approach of this invention, ID information is further recognized as text from an image part including ID information which extracted the image part including extracted ID information by the 2nd approach of this invention to giving retrieval data with image information (i.e., with image information), and recording, and retrieval data are given and recorded on this text.

[0022] As for retrieval data, also in this 2nd approach, it is desirable to have relation the same as that of the retrieval data given to the whole image information or predetermined here.

[0023] Also in which 1st and 2nd approach In addition, "whole retrieval data + image information" and "an image part including retrieval data +ID information", Or when retrieval data are specified as the record medium with which "whole retrieval data + image information" and "retrieval data +ID data" were recorded, it is desirable to set up so that "an image part including ID information" or "ID data" may be searched before searching "whole image information."

[0024] Although a certain amount of time amount requires "whole image information" for the output by retrieval since the amount of information is very large, this Since "an image part including ID information" or "ID data" is a part of whole image information, the amount of information can shorten the time amount which an output takes few compared with whole image information. moreover, since this "image part including ID information" (or "ID data") considers ID information as an image and naturally has it (or -- an alphabetic character -- carrying out) the formal contents (a name of patient (ID number) --) of the "whole image information" which that ID information shows if this retrieved ID information is seen An observer can recognize a photography date, a photography part, etc., and before seeing the "whole image information" itself, the image can confirm the truth of whether to be the target image which it is going to observe truly.

[0025] As opposed to the image information (whole image information) into which the 1st image information are recording equipment of this invention was inputted, and the image information (whole image information) which read what was recorded on the record carrier and obtained In the image information are recording equipment which saved this image information at the predetermined record medium after giving the retrieval data for retrieval An ID field extract means to extract an image part including ID information recorded on the position of the whole image information, It is characterized by having a retrieval data grant means to give predetermined retrieval data to an image part including extracted ID information, and a record means to record an image part including ID information to which retrieval data were given on a record medium as image information with said separate whole image information.

[0026] In the image information are recording equipment which recorded this image information on the predetermined record medium after the 2nd image information are recording equipment of this invention gave the retrieval data for retrieval to the inputted image information (whole image information) An ID field extract means to extract an image part including ID information recorded on the position of said whole image information, A character recognition means to recognize this ID information as alphabetic data from this image part, It is characterized by having a retrieval data grant means to give predetermined retrieval data to ID information recognized as this alphabetic data, and a record means to record ID information to which these retrieval data were given on a record medium as ID data with said separate image information.

[0027] In addition, as for the retrieval data given to the image part or ID information that a retrieval data grant means includes ID information, also in the 1st or 2nd equipment of this invention, it is desirable that it is what is set up as what has relation the same as that of the retrieval data given to the inputted image information like the approach of this invention or predetermined.

[0028]

[Effect of the Invention] According to the are recording approach of the image information of this invention, and equipment, were obtained by various kinds of image information acquisition systems which even alien systems, such as a CT scanner and MRI equipment, and CR equipment included. Even if the ID information itself is the case where it is not sent as alphabetic data separately from the image information, the image information which includes ID information in the image Extract an image part or the ID information itself including the ID information from the whole image information, and image information separate from the whole image information accumulates ** as alphabetic data. By matching the retrieval data given to each for the are recording, both can be accumulated simple so that whole image information can be indirectly searched based on ID information.

[0029]

[Embodiment of the Invention] Hereafter, the concrete gestalt for enforcing the are recording approach of the image information of this invention is explained using a drawing.

[0030] Drawing showing the multi-formatter 50 which includes the image information are recording equipment with

which drawing 1 enforces the are recording approach of the image information of this invention, The outline block diagram showing the image information structure of a system in which drawing 2 contains this multi-formatter 50, whole image information 100 for which drawing 3 is used by the image information system of this operation gestalt being shown -- this whole image information 100 **** -- ID information 110 for specifying the image other than the magnetic resonance imaging photoed by tomography image and MRI equipment 20 of the patient photoed by below-mentioned CT scanner 10 A photograph is taken.
[0031] The image information system of illustration was sent out as a video signal from CT scanner 10. The multi-formatter 50 which receives the tomography image information of the predetermined patient who has ID information, and the magnetic-resonance-imaging information sent out as a video signal from MRI equipment 20, and performs predetermined processing to such image information, It is the configuration which consists of filing equipment 30 which accumulates the image information to which predetermined processing was performed by this multi-formatter 50, and a laser imager 40 which reproduces that image information etc. as a visible image on a medical-application film.
[0032] As shown in drawing 1 in more detail, the multi-formatter 50 from the whole image information (for example, sign 100 shown in drawing 3) inputted from CT scanner 10 or MRI equipment 20 The image 100 An ID field extract means 51 to extract the image part 110 including ID information, such as a patient's ID number, recorded on the part, Image part 110 including this ID information And whole image information 100 (the image part 110 including ID information is also included) A retrieval data grant means 52 to receive and to give sequential retrieval data (for example, 1, 2, 3, --, etc.) respectively, Image part 110 including ID information to which retrieval data were given It has an input/output control means 53 to output and input to filing equipment 30 as image information with the separate whole image information 100, and to output to a laser imager 40.
[0033] Next, an operation of this operation gestalt is explained.
[0034] First, the whole image information 100 shown in drawing 3 is inputted into the multi-formatter 50 as a video signal from CT scanner 10 or MRI equipment 20.
[0035] whole image information 100 inputted into the multi-formatter 50 it inputs into ID field extract means 51 -- having -- ID field extract means 51 -- this whole image information 100 from -- image part (henceforth ID field image) 110 including the field where ID information was recorded It extracts. This ID field image 110 An extract is text and ID information uses the property that that signal value is close to binary information. For example, it is ID field image 110 about the field where the strong edge section appears repeatedly in narrow space. May carry out and When the location where ID information is recorded on every [which is connected] system (CT scanner 10, MRI equipment 20) is fixed, and the multi-formatter 50 memorizes the positional information, the field can be extracted easily.
[0036] Next, ID field image 110 And whole image information 100 It receives and is the sequence number 200 with the respectively same retrieval data grant means 52. It gives. In addition, these ID field image 110 Whole image information 100 Completely same sequence number 200 What is necessary is to continue a hyphen ("-") to the same sequence number, and just to add identification numbers, such as "1" and "2", to it after that in having given, since it is inconvenient in the case of next retrieval.
[0037] namely, whole image information 100 **** -- "1-1" and ID field image 110 **** -- giving "1-2" etc. -- then, it is good. Hereafter, it is the retrieval data 200 about the retrieval data included to this identification number. It calls.
[0038] Thus, the whole image information 100 to which retrieval data were given, respectively and ID field image 110 It is accumulated in filing equipment 30 by the input/output control means 53 at each **, respectively. However, whole image information 100 ID field image 110 It will be indirectly matched through the matched retrieval data "1-1" and "1-2." Therefore, ID field image 110 It is based and is the whole image information 100. Searching is possible.
[0039] Namely, when the retrieval directions (for example, retrieval data "1-2") from the outside are inputted to this multi-formatter 50, ID field image 110 with which this retrieval data "1-2" was given first It is searched from filing equipment 30 by the input/output control means 53, and is read. Although it is outputted to a film with retrieval data "1-2" as this shows drawing 4 (A) with a laser imager 40, or illustration has not been carried out, it is displayed on the screen of CRT connected to the multi-formatter 50 if needed.
[0040] and an observer -- the contents of photography of this ID field image 110 seeing -- this ID field image 110 Whole image information 100 (an ID number (name of patient) --) which it has in that part A photography part, a photography date, etc. can be checked and it is that whole image information 100 as a result of this check. If it judges that it is not necessary to see, processing will be ended as it is, and it is that whole image information 100. If it judges that it is necessary to see ID field image 110 By inputting the retrieval data "1-1" matched with the given retrieval data "1-2" into the multi-formatter 50 Observed ID field image 110 Whole image information 100 included in the part It can search from filing equipment 30. Searched whole image information 100 The above-mentioned ID field image 110 Like a case, as a laser imager 40 shows to drawing 5 , it is outputted to a film with retrieval data "1-1."

[0041] Thus, the image information are recording equipment built in the multi-formatter 50 which enforces the image information are recording approach of this operation gestalt is CT scanner 10 or MRI equipment 20 to the whole image information 100. It is the image information 100 separately. Even if it is corresponding ID information or the case where it is not sent out, it is based on ID information by the simple approach, and it is the whole image information 100 indirectly. It is the whole image information 100 so that it can search. It can file.

[0042] ID field image 110 from which the multi-formatter 50 which showed drawing 6 to above-mentioned drawing 1 was further extracted by ID field extract means 51 from -- It has an ID recognition means 54 to recognize ID information as alphabetic data, and the retrieval data grant means 52 is ID field image 110. And ID information recognized as alphabetic data (It is hereafter called ID data) 111 Except the point which receives and gave sequential retrieval data (for example, 1, 2, 3, --, etc.), it is the same configuration as the multi-formatter 50 shown in drawing 1 .

[0043] An operation of the image information are recording equipment shown in drawing 6 is explained.

[0044] Whole image information 100 shown in drawing 3 from CT scanner 10 or MRI equipment 20 like multi-formatter 50' first shown in drawing 1 It is inputted into multi-formatter 50' as a video signal.

[0045] whole image information 100 inputted into multi-formatter 50' it inputs into ID field extract means 51 -- having -- ID field extract means 51 -- this whole image information 100 from -- ID field image 110 is extracted.

[0046] a part for subsequently, ID field image 110 from which ID recognition means 54 was extracted from -- ID information is recognized as alphabetic data. The recognition approach as this alphabetic data can use the various approaches that pattern matching etc. is well-known.

[0047] Next, the retrieval data grant means 52 is the whole image information 100 and the ID data 111. And ID field image 110 The same sequence number 200 It gives. In addition, the method of grant of a concrete sequence number is the same with receiving the above-mentioned operation gestalt. however, ID data 111 And ID field image 110 **** -- what is necessary is just to add the same identification number

[0048] namely, whole image information 100 **** -- "1-1" and ID field image 110 And ID data 111 **** -- giving "1-2" etc. -- then, it is good. Hereafter, it is the retrieval data 200 about the retrieval data included to this identification number. It calls.

[0049] Thus, whole image information 100 to which retrieval data were given, respectively It is accumulated in filing equipment 30 by the input/output control means 53 at each **. Moreover, ID field image 110 And ID data 111 It is accumulated in filing equipment 30 in one as what has the same retrieval data with the input/output control means 53.

[0050] When the retrieval directions (for example, retrieval data "1-2") from the outside are inputted to this multi-formatter 50', ID field image 110 with which this retrieval data "1-2" was given first And ID data 111 It is searched from filing equipment 30 by the input/output control means 53, and is read. Although it is outputted to a film with retrieval data "1-2" as this shows drawing 4 (B) with a laser imager 40, or illustration has not been carried out, it is displayed on the screen of CRT connected to multi-formatter 50' if needed.

[0051] And an observer is this ID field image 110. And ID data 111 It sees. Recognized ID data 111 It is ID field image 110 about whether it is the right. It can check by comparison. moreover, the contents of photography of this ID data 111 ID field image 110 ** -- whole image information 100 (an ID number (name of patient) --) which is carried out and it has in that part A photography part, a photography date, etc. can be checked and it is that whole image information 100 as a result of this check. If it judges that it is not necessary to see, processing will be ended as it is, and it is that whole image information 100. If it judges that it is necessary to see ID field image 110 And ID data 111 By inputting the retrieval data "1-1" matched with the given retrieval data "1-2" into the multi-formatter 50 Observed ID field image 110 Whole image information 100 included in the part It can search from filing equipment 30. Searched whole image information 100 The above-mentioned ID field image 110 It is outputted to a film with retrieval data "1-1" by the laser imager 40 like a case.

[0052] Thus, the image information are recording equipment built in the multi-formatter 50 which enforces the image information are recording approach of this operation gestalt is CT scanner 10 or MRI equipment 20 to the whole image information 100. It is the image information 100 separately. Even if it is the case where corresponding ID information is not sent out, it is based on ID information by the simple approach, and it is the whole image information 100 indirectly. It is the whole image information 100 so that it can search. It can file.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The outline block diagram showing the configuration of the image information are recording equipment built in the multi-formatter 50 which enforces the image information are recording approach of this invention
[Drawing 2] The outline block diagram showing the image information structure of a system containing the multi-formatter 50 shown in drawing 1
[Drawing 3] Whole image information 100 used by the image information system of the operation gestalt shown in drawing 1
[Drawing 4] (A) Drawing showing the playback condition of ID field image by the image information are recording equipment of the operation gestalt shown in drawing 1 , drawing showing the playback condition of ID field image by the image information are recording equipment of the operation gestalt shown in (B) drawing 6
[Drawing 5] Drawing showing the playback condition of the whole image information by the image information are recording equipment of the operation gestalt shown in drawing 1 or drawing 6
[Drawing 6] The outline block diagram showing the configuration of the image information are recording equipment built in the multi-formatter 50 which enforces the image information are recording approach of this invention
[Description of Notations]
10 CT Scanner
20 MRI Equipment
30 Filing Equipment
40 Laser Imager
50 50' Multi-formatter
51 ID Field Extract Means
52 Retrieval Data Grant Means
53 Input/output Control Means
54 ID Recognition Means
100 Whole Image Information
110 ID Field Image
111 ID Data

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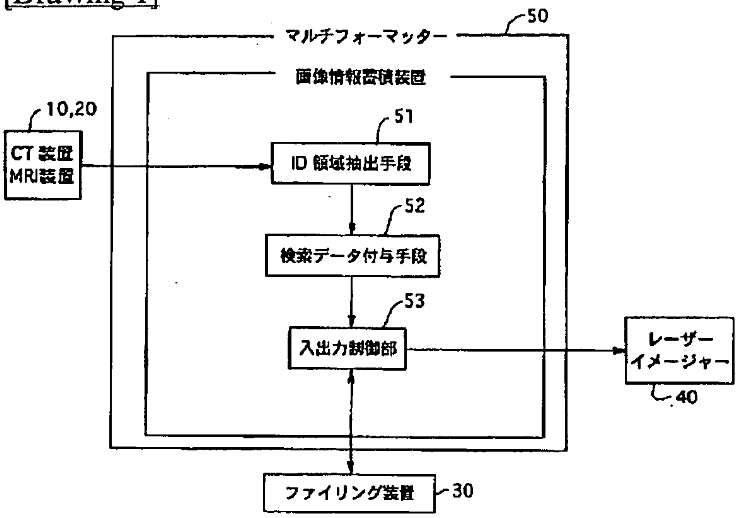
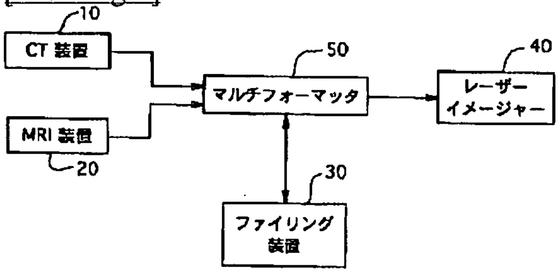
DRAWINGS

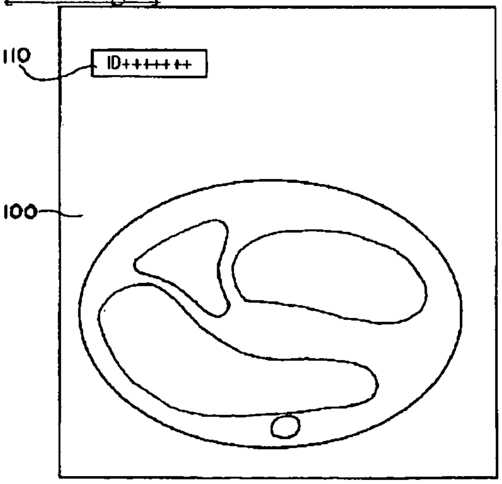
[Drawing 1]


50
マルチフォーマッター
画像情報蓄積装置
10,20
CT装置
MRI装置
51
ID領域抽出手段
52
検索データ付与手段
53
入出力制御部
レーザーイメージャー
40
ファイリング装置
30

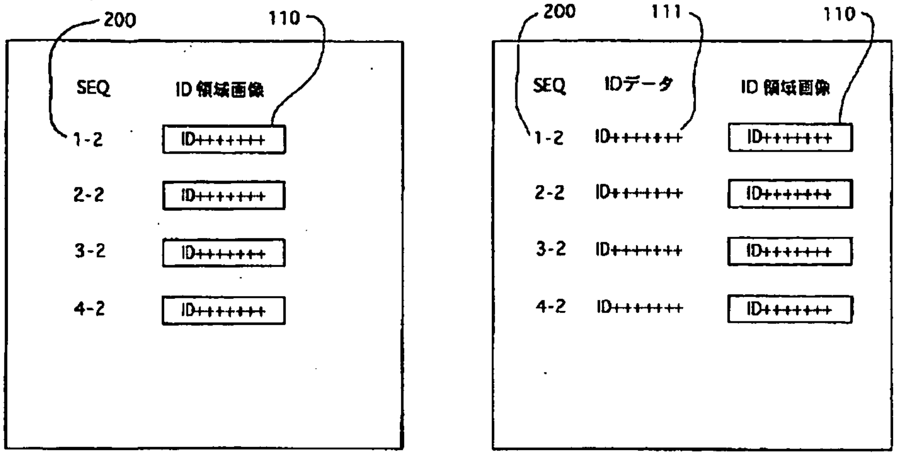
[Drawing 2]


10
CT装置
50
マルチフォーマッタ
40
レーザーイメージャー
MRI装置
20
30
ファイリング装置

[Drawing 3]

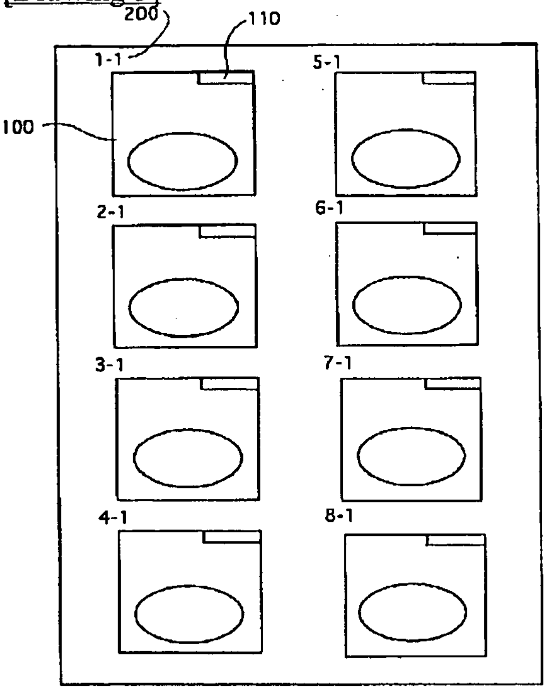


[Drawing 4]

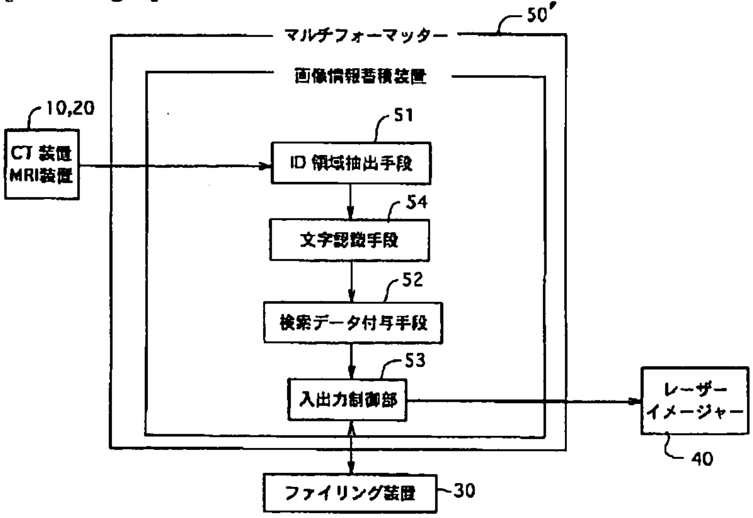

200
110
SEQ
ID領域画像
1-2
2-2
3-2
4-2
ID+++++++
200
111
110
SEQ
IDデータ
ID領域画像
1-2
2-2
3-2
4-2
ID+++++++

(A) (B)

[Drawing 5]


200
110
100
1-1
2-1
3-1
4-1
5-1
6-1
7-1
8-1

[Drawing 6]


マルチフォーマッター
50'
画像情報蓄積装置
10,20
CT装置
MRI装置
51
ID領域抽出手段
54
文字認識手段
52
検索データ付与手段
53
入出力制御部
レーザーイメージャー
40
ファイリング装置
30

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CLAIMS

[Claim(s)]

[Claim 1] In the image information are recording approach recorded on the predetermined record medium after giving the retrieval data for retrieval to the inputted image information An image part including ID information recorded on the position of said image information is extracted. The image information are recording approach characterized by recording an image part including ID information to which retrieval data were given to the image part including extracted this ID information, and these retrieval data were given on a record medium as image information separate from said image information.

[Claim 2] The image information are recording approach according to claim 1 characterized by setting up as what has relation the same as that of the retrieval data which give the retrieval data given to an image part including said ID information to said inputted image information, or predetermined.

[Claim 3] In the image information are recording approach recorded on the predetermined record medium after giving the retrieval data for retrieval to the inputted image information An image part including ID information recorded on the position of said image information is extracted. Retrieval data are given to ID information which has recognized this ID information as alphabetic data from this image part, and has been recognized as this alphabetic data. The image information are recording approach characterized by recording ID information to which these retrieval data were given on a record medium as ID data separate from said image information.

[Claim 4] The image information are recording approach according to claim 3 characterized by setting up as what has relation the same as that of the retrieval data which give the retrieval data given to said ID information to said inputted image information, or predetermined.

[Claim 5] In the image information are recording equipment recorded on the predetermined record medium after giving the retrieval data for retrieval to the inputted image information An ID field extract means to extract an image part including ID information recorded on the position of said image information, A retrieval data grant means to give predetermined retrieval data to an image part including this ID information, Image information are recording equipment characterized by having a record means to record an image part including ID information to which these retrieval data were given on a record medium as image information separate from said inputted image information.

[Claim 6] Said retrieval data grant means is image information are recording equipment according to claim 5 characterized by being what set up as what has relation the same as that of the retrieval data which give the retrieval data given to an image part including said ID information to said inputted image information, or predetermined.

[Claim 7] In the image information are recording equipment which recorded this image information on the predetermined record medium after giving the retrieval data for retrieval to the inputted image information An ID field extract means to extract an image part including ID information recorded on the position of said image information, A character recognition means to recognize this ID information as alphabetic data from this image part, It is image information are recording equipment characterized by having a retrieval data grant means to give predetermined retrieval data to ID information recognized as this alphabetic data, and a record means to record ID information to which these retrieval data were given on a record medium as ID data with said separate image information.

[Claim 8] Said retrieval data grant means is image information are recording equipment according to claim 7 characterized by being what set up as what has relation the same as that of the retrieval data which give the retrieval data given to said ID information to said inputted image information, or predetermined.

[Translation done.]